Astr 350 – Introduction to Astrophysics - Stars
Fall 2014 Course Information & Syllabus

Course Description: This course provides an introduction to celestial mechanics, radiative transfer, stellar structure, and stellar remnants (including black holes and neutron stars). Aspects of star formation and solar system formation will also be explored. Together, ASTR 350 and ASTR 360 provide a comprehensive survey of modern astrophysics needed for senior research and graduate study in astronomy. Either ASTR 350 or 360 may be taken first. As it is, there is a large amount of material to cover in this course. As a result, some topics will be covered at a relatively shallow level.

Course Objectives and Learning Outcomes: This is primarily a content driven course – the student is expected to learn the content covered in the lectures listed on following page. By then end of the course, the student should understand how the spectrum of a star forms and how observations of the spectrum can be used to infer physical properties of the star. The student will also understand the general internal physical structure of a star from the time it first forms until the end of its life. The student should understand the physical principles that govern this structure and what causes the to change throughout the life of a star.

Meeting time and place:

Astr 350
Tues, Thurs 10:50 am – 12:05 pm
Herman Brown 254

Instructor:

Prof. Christopher M. Johns-Krull
Department of Physics and Astronomy
Office: 352 Herman Brown
Phone: (713) 348-3531 E-mail: cmj@rice.edu

Office Hours:

Wednesdays: 11:00 am - Noon Thursdays: 1:00 pm – 2:00 pm
Or by appointment

Required Texts:

Title: "An Introduction to Modern Astrophysics" (Second Edition), hardback
Authors: Bradley W. Carroll & Dale A. Ostlie
Publisher: Pearson/Addison Wesley

Grading:

Homework (approx. 8 assignments)	45%
Midterms (2)	30%
Final Exam	25% (take home, inclusive, due at end of finals period)

Late Policy:
Homework assignments must be turned into the professor by the end of class on the due date, which will be given on each homework set. Late homework can be turned in for partial credit. If the assignment is turned in by the end of the next class, the penalty is 25%; by the end of the next class, 50%; and so on.

Students With Disabilties:
If you have a documented disability that will impact your work in this class, please contact the professor to discuss your needs. Additionally, you will need to register with the Disability Support Services Office in the Ley Student Center.

Honor Code:
The midterms and final exam are pledged. No help may be given or received on these assignments. Homework assignments are meant to help you understand the material, so you are free to discuss the general nature of the concepts with anyone. However, the actual description of the answer and any specific calculations should be done individually. If you are in doubt about how much to ask/divulge about a specific problem, you might work through a problem that is conceptually similar to the one assigned. Copying down someone else's answer (or allowing someone to copy yours) is an honor code violation.

Astronomy 350 Daily Plan
Fall 2014

	Topics to be Covered	Chapter(s)
T Aug 26	Organization and The Celestial Sphere	1
Th Aug 28	Celestial Mechanics I	2
T Sep 2	Celestial Mechanics II	2
Th Sep 4	The Continuous Spectrum of Light	3
T Sep 9	The Interaction of Light & Matter	5
Th Sep 11	Telescopes & Fundamental Stellar Parameters	6, 7
T Sep 16	Stellar Parameters, Brown Dwarfs, & Extrasolar Planets	7 + HO
Th Sep 18	Stellar Atmospheres I	8, 9
T Sep 23	Stellar Atmospheres II	9
Th Sep 25	Stellar Atmospheres III	9 + HO
T Sep 30	Midterm I	
Th Oct 2	Stellar Interiors I	10
T Oct 7	Stellar Interiors II	10
Th Oct 9	Stellar Interiors III	10
T Oct 14	Midterm Recess	
Th Oct 16	The Sun	11
T Oct 21	ISM	12 + HO
Th Oct 23	ISM continued and Star Formation	12
T Oct 28	Pre-Main Sequence Evolution and Planet Formation	12, 23
Th Oct 30	The Main Sequence I	13
T Nov 4	The Main Sequence II	
Th Nov 6	Midterm II	13
T Nov 11	Low Mass Post-Main Sequence Evolution	15
Th Nov 13	High Mass Post-Main Sequence Evolution I	15
T Nov 18	High Mass Post-Main Sequence Evolution II	15
Th Nov 20	Special Relativity & Degeneracy	4, 16
T Nov 25	White Dwarfs & Neutron Stars	16
Th Nov 27	Thanksgiving	
T Dec 2	General Relativity & Black Holes	17
Th Dec 4	More Black Holes & Close Binaries	17, 18